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BUILDING QFD MODEL FOR TECHNICAL EDUCATION: STUDENTS AS STAKEHOLDERS

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ABSTRACT

The purpose of a Quality Function Deployment model is the identification of the needs of the stakeholder. The stakeholders of a Technical Institution include students, faculty, parents, recruiters, administrative staff, etc. This paper focuses on Technical Institution as a service provider and students as the prime stakeholder. The requirements of the students with respect to the academic application of technical education are used as input for the QFD model and the key activities that the management of the technical institution should focus upon to satisfy the students are reached through the QFD model development. The model development process has been divided into three stages: Service Planning, Process Planning and Activity planning. In this paper the author has focused upon the model development with respect to the students of technical education system as the primary stakeholder. The key activities are further categorized as A, B and C with the A activities as the most important.

KEYWORDS: Technical Education, Quality Function Deployment, Service Planning, Process Planning and Activity Planning

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Original Article

INTRODUCTION

Industry leaders complain about the absence of quality engineers for their industry. Students are earning a formal degree through B. Tech. or B. E. but they lack the technical expertise that is needed in the industry, since no such hands on industrial training is provided during their course work. Technical education perceived as a business opportunity by some managements, which lead to employment of under qualified staffs and other resources, which is a major cause of poor quality of passing out students. There is a severe shortage of qualified and competent faculty. There is a lack of adequate industry-institute interaction. This has created a mismatch between education and training (knowledge and skills) received by graduates, and job requirements. A serious situation has arisen in recent years because of the mushrooming of a large number of private technical institutes. Barring some exceptions, there are problems regarding maintenance of standards. Students are lacking technical skills, English competency, communication and presentation skills and the ability to work as a part of team. Since the supply is more than demand, there is a huge competition for admissions amongst the technical institutes. It is thus imperative to devise a system to capture the demands of the stakeholders and deal with them scientifically for quality improvement of technical education system as a whole. Quality Function Deployment model presents an important solution to the above mentioned problems due to its ability of handling customer requirements and expected output in the same model.

What is QFD?

Quality Function Deployment is a method used to translate customer requirements and expectations into product or service attributes and quality (Sahney et al., 2004). The approach is used for planning products and services. The process starts with the voice of the customer. The methodology was introduced in Japan and was developed at Mitsubishi's Kobe Shipyard in 1972 (Jnanesh&Hebbar, 2008). The QFD process is a sequence of activities for processing customer values so that these values can directly shape the design and production of the product or service.

The fundamental steps of this process are (Pitman et al, 1996) Customer identification, identification of customer wants and the ways to fulfill these wants. The common format of HOQ is made up of six components (Chen & Chou, 2011; Ictenbas&Eryilmaz, 2011) as shown in figure 1. These include Stakeholders' requirements (whats), Operational requirements (Hows), Competitive assessment (whys), Relationship matrix (whatsvsHows), Correlation matrix (HowsvsHows) and Operational priorities (How much)

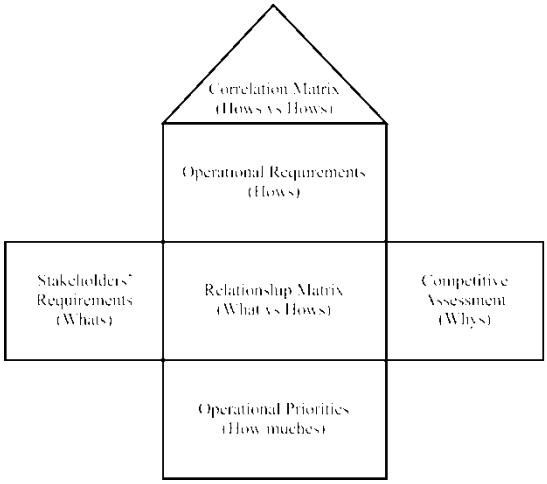


Figure 1: House of Quality

QFD for Quality Improvement in Educational System

Following table presents the work of various researchers in the area of quality improvement of technical education using QFD.

Table 1: QFD for Quality Improvement in Educational System

Author	Nature of work
Clayton (1993)	The university's processes and critical success factors reviewed to identify key areas for improvement
Brackin (2002)	QFD used for developing an assessment tool for both content and process are outlined.
Sahney et al (2003)	QFD used for a study on engineering and management educational institutions in Delhi, India in terms of how well they meet the needs of industrial customers
Wurjaningrum (2008)	Gaps between perceived quality and expected quality by the students as users studied and action plans for improving higher education service quality proposed.

Table 1: Contd.,	
Jing et al (2010)	An approach to quality control and improvement of college quality courses management based on the accomplishment of quality planning according to Juran's Quality Trilogy is presented.
Jamali et al (2010)	Some main models in service quality such as TQM and QFD are discussed and a new model for improving service quality using system approach is developed in higher education institutions.
An (2011)	QFD principles applied to higher education system and various aspects and tools associated with QFD are discussed to enhance service quality.
Hafeez and Mazouz (2011)	The higher education management program cycle are assessed and evaluated through the application of the QFD technique.
Ictenbasa and Eryilmazb (2011)	QFD methodology used in assessing the effectiveness of teaching methods in the perspective of employers' expectations for an industrial engineering course
Mukaddes et al (2012)	The transformation process of students' requirements into instructional developments is illustrated by developing HOQ
Verna (2014)	The learning needs of students in an accounting course are assessed and translated into educational strategies using QFD.

Following table presents the work of various researchers in the area of curriculum design of technical education using QFD.

Table 2: QFD for Curriculum Design in Technical Education

Murgatroyd (1993)	QFD method for the design, development and delivery through distance education
Chen and Chen (2002)	An approach based on QFD to select functional requirements for the purpose of evaluating technical textbooks and selecting the best-fit textbook based on customers' voices is introduced.
Peters et al (2005)	QFD is used to design a production and operations management course.
Jnanesh and Hebbar (2008)	QFD used in developing curriculum of engineering education.
Desai and Thomassian (2008)	QFD for continuous improvement into engineering course design is presented.
Gonzalez et al (2011)	An alternative approach to QFD curriculum design by using a survey of employers
Gupta et al (2012)	QFD applied to education program analysis and design for market requirements.
Liu et al (2013)	QFD used for industrial design curriculum

Benefits of QFD

The foremost benefit of QFD is the customer satisfaction and delight (Lim&Tang, 2000). QFD is helpful in reduction in development time and costs. The design cycles are much shorter and are more productive (Howell, 2000). QFD helps organization in continual improvement if conducted periodically (Ermer&Kniper, 1998). QFD helps organization reacting better on feedbacks. QFD improves internal communications. QFD helps Organization to understand customer needs and integrate voice of customers into development process. QFD also conveys the decision makers, what exactly it needs to be done at the ground level to meet customer needs while having competitive advantage. When QFD process is implemented, a knowledge base is created; this record is used for decision-making.

Applications and Stakeholders of Technical Education System

Three important applications were identified as Academics, General Administration and Placements. Important relevant customers were identified as Students, Teaching staff and Industry for Academics application (Table 3). Student, Teaching Staff, Non-teaching Staff and parents were the customers identified for General Administration application. And customers as Students and Industry were identified for the application of Placements. Here, Academics as an application area includes teaching standards, research and development, course delivery and so on. Whereas General Administration includes infrastructures, various facilities and services provided, working conditions and other motivational factors. Placements essentially represent both training and placements parts.

Table 3: Applications and Stakeholders of Technical Education System

Sr. No.	Application	Stakeholder
1	Academics	Students Teaching staff Industry
2	General Administration	Students Teaching staff Non-teaching staff Parents
3	Placements	Students Industry

Data Collection

For data collection from Students a multistage purposeful sampling was used. In the first stage, 3 technical education-providing institutes were selected with convenience sampling. Names of these institutes are not mentioned to respect the anonymity requested by them. In the second stage random sampling technique was used . 20 students from each institute, making it a total of 60 students for interviews were selected. The interviews were conducted till the saturation point. The sample can be considered homogeneous since the students represent similar background. Before starting the interviews the respondents were briefed about the purpose of the research and its methodology. They were also assured that their names along with particular responses would not be exposed to anyone.

The following requirements were obtained from students as stakeholders

Table 4: Students requirements

Stakeholders' Requirements -Students			
1	**Professors**	22	Question banks
1	Adequate professors	23	Comprehensive study materials
2	Good presentation skills	**4**	**Course Delivery**
3	Approachable	24	Latest applications and examples covered
4	Addressing industry requirements	25	Interactive lectures
5	Effective classroom management	26	Modern techniques
6	Global awareness	27	Examination preparation
7	Problem solving skill	28	Communication laboratory
8	Well qualified	29	Up-to-date equipment
9	Friendly	30	Library facilities
2	**Course Structure**	**5**	**Evaluation**
10	Effective feedback system	31	Moderate Evaluation
11	Project work	32	Evaluation coupled with comments
12	Advanced certificate courses	33	Practical performance & viva
13	Attention towards week students	34	Correctness of evaluation
14	Well defined syllabus	35	Suitable time between two exams
15	More laboratory practical	36	Ideal answers provided
16	All electives available	**6**	**Co curricular Activities**
17	Yearly time table	37	Academic events organization
18	PG entrance exams coaching	38	Co curricular competitions
3	**Course Content**	39	Guest lectures on latest trends
19	Periodic updating	40	Attending seminar & workshops
20	Neither too difficult nor too easy	41	Entrepreneurship developments
21	Lab manuals		

Importance Ratings

The Stakeholders then weighs the importance of each Stakeholder's Requirements by filling the response sheet. These importance ratings are then fed to an excel sheet and arithmetic mean is taken, which is written in front of respective Stakeholder's Requirements, for all applications. Here, the stakeholders rate the needs from 1 to 5, where higher number represents higher importance.

Table 5: Importance Ratings-Students

Importance Ratings-Students			
Professors		Question banks	4.1
Adequate professors	4.3	Comprehensive study materials	4.4
Good presentation skills	4.1	**Course Delivery**	
Approachable	3.7	Latest applications and examples covered	4.2
Addressing industry requirements	4.3	Interactive lectures	4
Effective classroom management	3.6	Modern techniques	3.9

Table 5: Contd.,

Global awareness	3.9	Examination preparation	4.1
Problem solving skill	4	Communication laboratory	3.5
Well qualified	4.2	Up-to-date equipment	3.8
Friendly	3.8	Library facilities	4.1
Course Structure		**Evaluation**	
Effective feedback system	3.9	Moderate Evaluation	3.9
Project work	4.4	Evaluation coupled with comments	4.2
Advanced certificate courses	4.3	Practical performance & viva	4.1
Attention towards week students	4.3	Correctness of evaluation	4.1
Well defined syllabus	3.9	Suitable time between two exams	3.9
More laboratory practical	3.9	Ideal answers provided	4.4
All electives available	3.9	**Co curricular Activities**	
Yearly time table	3.6	Academic events organization	4.3
PG entrance exams coaching	4.1	Co curricular competitions	4.1
Course Content		Guest lectures on latest trends	4.2
Periodic updating	3.5	Attending seminar & workshops	3.8
Neither too difficult nor too easy	3.3	Entrepreneurship developments	3.7
Lab manuals	3.4		

QFD Model Development

MS Excel was used for developing the model through filling the relationship and correlation matrices; and calculating row weights and column weights. After brainstorming various design specifications in terms of Service Features were identified and they were grouped using affinity diagrams. Then the strengths of relations between Stakeholders' Requirements and Service Features were identified, and mentioned using weighted numeric symbols. Row Weights and Column Weights were then calculated. Further, the Directions of Improvement of Service Features were identified and mentioned graphically. The correlation between each Service Feature was then mentioned as the roof of HOQ. Stakeholders' Requirements and Service Features were then prioritized

- **Service Planning Hoq**

In Service Planning HOQ, Stakeholders' Requirements are translated to Service Features and prioritized Service Features to satisfy Stakeholders' Requirements are obtained. As shown in figure 1 which is Service Planning HOQ for Students application in Academics application. The importance ratings gathered from the stakeholders are written against respective Stakeholders' Requirements. The various identified Service Features are written on the topside of the HOQ. In the Relation Matrix, each Stakeholders' Requirement is related with every Service Feature. The weights of relation are decided as 9, 3 and 1 for strong, medium and weak relations respectively. These weights are multiplied with importance rating provided by stakeholders themselves, as presented by the formula below. Thus, while translating Stakeholders' Requirements to Service Features the effect of importance rating given by the Stakeholders is considered.

First Row Weights are computed followed by Column Weights as per formulae mentioned below.

Weight = Row Rating x Summation (Weights related in that row)

Column Weight = Summation (Weight of the every cell in the column x Total row weight for the row containing that cell)

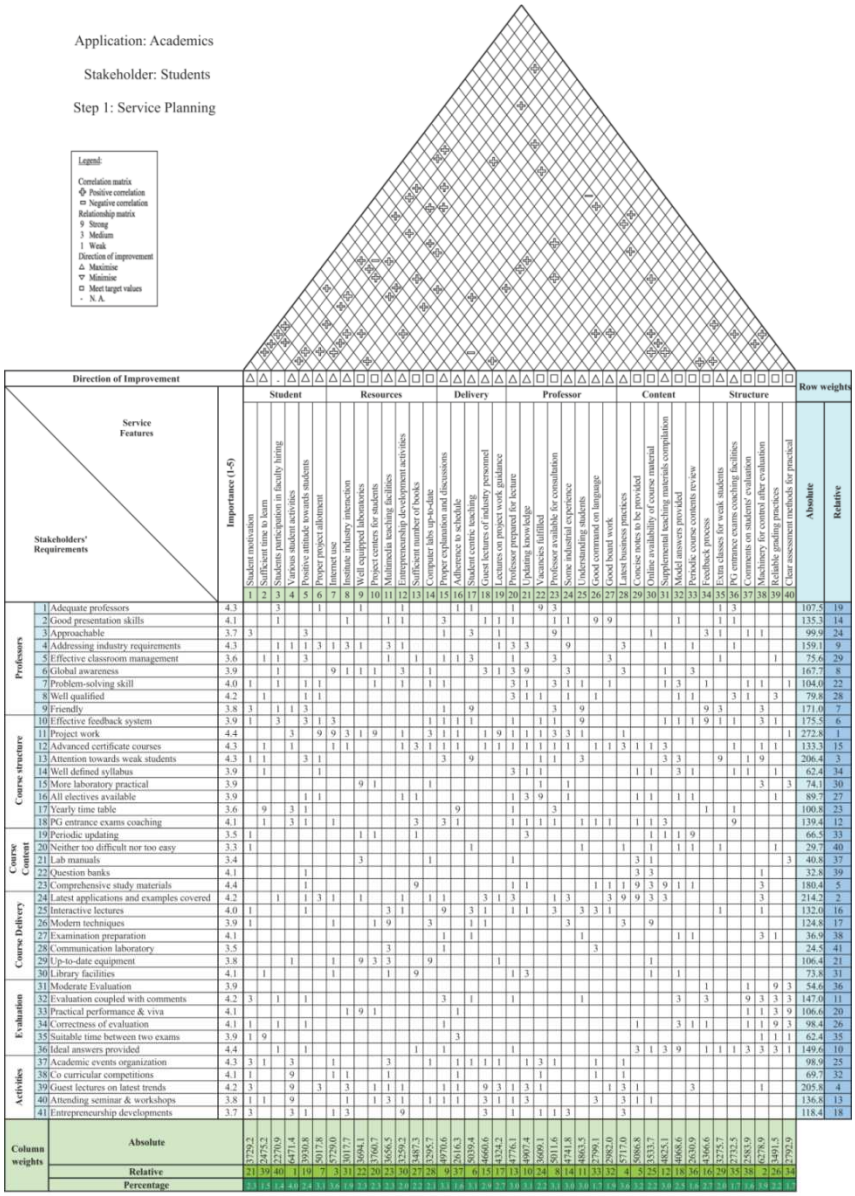
Relative Row Weights and Relative Column Weights are calculated. The Direction of Improvement of the Service Features are mentioned, so as to graphically understand whether to maximize or minimize these Service Features or a target value is to be met. The roof of the HOQ is called Correlation Matrix. This matrix is graphically filled to show the impact of one Service Feature over the other as positively correlated or negatively correlated. Another key aspect computed here is the Percentage of Column Weights. These percentages signify the share of a particular Service Feature amongst all Service Features. These percentages thus represent the importance of Service Features for this HOQ.

- **Process Planning**

The second HOQ in QFD model development is Process Planning. The prioritized Service Features of the first HOQ are here related with and translated to Key Processes to meet Service Features. Service Features form the left hand side or the 'whats' and Key Processes form the topside of 'hows' of this HOQ. All steps of Step 1, i.e. Service Planning HOQ are repeated then. Here, every Service Feature is related with every Key Process through Relationship Matrix and Prioritized Key Processes to deliver Service Features are obtained. All these Service Features ratings have come from relating them with every Stakeholders' Requirement, which in turn have come the importance ratings gathered from the stakeholders. So in every step, all factor srequired for meeting Service Features are getting considered with appropriate weights. Figure 2 presents the Service Planning HOQ for Students in Academics application.

- **Activity Planning**

This is the third and final step of adopted QFD methodology. Here, the Key Processes are translated to Key Activities through this third HOQ. This translation is very important as it provides ground level actual actions to perform desired processes so that stakeholders' requirements are satisfactorily met. Following the same steps of previous two HOQs, the Key Processes are related with and translated with the Key Activities and finally the prioritized Key Activities are obtained. For calculating the Prioritized Key Activities, the Key Processes are related with Key Activities in the Relationship Matrix. The Row Weights and Column Weights are calculated using the ratings of Key Processes that are actually Percentage Column Weights of previous HOQ Process Planning. Similarly the relationships and calculations of Process Planning HOQ are based on the Percentage Column Weights of Service Planning HOQ, which are actually based on the actual importance ratings gathered from stakeholders. Hence the Stakeholders' Requirements and their quantitative ratings are converted into Prioritized Key Activities. Figure 3 shows the Process Planning HOQ for stakeholder Students in Academic application.



Direction of Improvement			△	△	.	△	△	△	△	△	□	□	△	△	□	□	△	△	△	△	△	△	△	△	△	△	△	△	△	△	□	□	△	△	△	□	□	□	Row weights	
			Student							Resources							Delivery						Professor							Content							Structure					
Stakeholders' Requirements \ Service Features		Importance (1-5)	Student motivation	Sufficient time to learn	Students participation in faculty hiring	Various student activities	Positive attitude towards students	Proper project allotment	Internet use	Institute industry interaction	Well equipped laboratories	Project centers for students	Multimedia teaching facilities	Entrepreneurship development activities	Sufficient number of books	Computer labs up-to-date	Proper explanation and discussions	Adherence to schedule	Student centric teaching	Guest lectures of industry personnel	Lectures on project work guidance	Professor prepared for lecture	Updating knowledge	Vacancies fulfilled	Professor available for consultation	Some industrial experience	Understanding students	Good command on language	Good board work	Latest business practices	Concise notes to be provided	Online availability of course material	Supplemental teaching materials compilation	Model answers provided	Periodic course contents review	Feedback process	Extra classes for weak students	PG entrance exams coaching facilities	Comments on students' evaluation	Machinery for control after evaluation	Reliable grading practices	Clear assessment methods for practical	Absolute	Relative
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40		
Professors	1	Adequate professors	4.3			3			1		1			1				1	1		1		9	3												1	3					107.5	19
	2	Good presentation skills	4.1			1				1			1	1			3			1	1	1		1	1	9	9					1				1	1					135.3	14
	3	Approachable	3.7	3				3									1		3		1			9						1					3	1		1	1			99.9	24
	4	Addressing industry requirements	4.3			1	1	1	3	1	3	1		3	1						1	3	3		9				3													159.1	9
	5	Effective classroom management	3.6		1	1		3					1			1	1	1	3			1			3			3								1					1		75.6	29
	6	Global awareness	3.9			1				9	1	1	1		3		1				3	1	3	9		3			3			1		3								167.7	8
	7	Problem-solving skill	4.0	1		1		1	1				1		1		1	1				3	1		3	1	1		1			1	3		1			1	1		1	104.0	22
	8	Well qualified	4.2		1			1	1													3	1	1		1		1				1	1			3	1		3			79.8	28
	9	Friendly	3.8	3		1	1	3									1		9					3	9										9	3			3			171.0	7
Course structure	10	Effective feedback system	3.9	1		3		3	1	3						1	1	1	1			1		1	1		9					1	1	1	9	1	1		3	1		175.5	6
	11	Project work	4.4				3		9	9	3	1	9		1		3	1	1		1	9	1	1	1	3	3	1		1											1	272.8	1
	12	Advanced certificate courses	4.3		1		1			1	1				1	3	1	1	1		1	1	1	1	1	1		1	1	3	1	1	3				1		1	1	1		133.3	15
	13	Attention towards weak students	4.3	1	1			3	1								3		9					1	1		3					3	3			9		1	9			206.4	3
	14	Well defined syllabus	3.9		1				1													3	1	1					1	1		3	1			1	1		1			62.4	34
	15	More laboratory practical	3.9								9	1				1							1		1														3		3	74.1	30
	16	All electives available	3.9					1	1						1	1						1	3	9		1			1	1		1	1							1		89.7	27
	17	Yearly time table	3.6		9		3	1										9				1			3										1	1						100.8	23
	18	PG entrance exams coaching	4.1		1		3	1		1					3		3	1				1	1	1	1		1	1	1	1	1	3				9							139.4	12
Course Content	19	Periodic updating	3.5	1							1	1			1									3						1	1	1	9									66.5	33
	20	Neither too difficult nor too easy	3.3	1															1								1		1		1	1		1							1	29.7	40
	21	Lab manuals	3.4								3					1						1							3	1											3	40.8	37
	22	Question banks	4.1					1																					3	3								1			32.8	39
	23	Comprehensive study materials	4.4				1							9							1	1					1	1	1	9	3	9	1	1				3				180.4	5
Course Delivery	24	Latest applications and examples covered	4.2			1		1	3	1		1			1	1			3	1	3			1	3			3	9	9	3	3							3			214.2	2
	25	Interactive lectures	4.0	1			1						3	1			9		3	1		1	1		3		3	3	1							1							132.0	16
	26	Modern techniques	3.9	1					1			1	9			3			1	1					3				3		9											124.8	17
	27	Examination preparation	4.1														1		1								1						1	1					3	1		36.9	38
	28	Communication laboratory	3.5											3			1											3														24.5	41
	29	Up-to-date equipment	3.8				1		1		9	3	3			9					1									1												106.4	21
	30	Library facilities	4.1		1				1				1		9								1	3						1		1										73.8	31
Evaluation	31	Moderate Evaluation	3.9																																1			1		9	3	54.6	36
	32	Evaluation coupled with comments	4.2	3		1		1									3		1			1				1							3		3			9	3	3	3	147.0	11
	33	Practical performance & viva	4.1							1	9	1						1																					1	1	3	9	106.6	20
	34	Correctness of evaluation	4.1	1		1		1									1													1			3	1	1			1	1	9	3	98.4	26
	35	Suitable time between two exams	3.9	1	9													3																						1	1	1	62.4	35
	36	Ideal answers provided	4.4		1		1								1		1					1							3	1	3	9		1	1	1	3	3	3	1	149.6	10
Activities	37	Academic events organization	4.3	3	1		3		1			3			1			1	1	1	1		1	3	1		1		1	1													98.9	25
	38	Co curricular competitions	4.1	1			9		1	1		1						1					1				1		1	1													69.7	32
	39	Guest lectures on latest trends	4.2	3			9		3		3		1	1			1	1		9	3	1	3	1				1	3	1			3						1				205.8	4
	40	Attending seminar & workshops	3.8	1	1		9			1		1	3	1		1	1	1		3	1	1	3				3		3	1	1												136.8	13
	41	Entrepreneurship developments	3.7	3			3	1		1	3				9					3		1		1	1	3			3														118.4	18
Column weights		Absolute	7729.2	5475.2	2270.9	14471.4	9300.8	5017.8	7729.0	10177.7	13694.1	17667.7	16566.5	12259.2	14487.3	12295.7	19770.6	25616.3	20359.4	16660.6	4324.2	4776.1	19007.4	16099.1	19011.6	17741.8	18603.5	17994.1	5982.0	5717.0	16986.8	15333.7	18252.1	16068.6	15466.6	12753.7	13725.5	15858.9	12776.9	14911.5	17925.9	
		Relative	21	39	40	3	19	29	31	22	20	23	23	30	27	26	9	37	6	15	35	33	10	24	8	14	11	33	32	4	5	25	12	16	16	29	25	18	28	2	26	14		
		Percentage	2.3	1.5	1.4	4.0	2.4	3.1	3.6	1.9	2.3	2.3	2.3	2.0	2.2	2.1	3.1	1.4	3.1	2.9	2.7	3.0	3.1	2.2	3.1	3.0	3.0	1.7	1.9	3.6	3.2	2.2	3.0	2.5	1.6	2.7	2.0	1.7	2.6	3.9	2.2	1.7		

Figure 2: Service Planning House of Quality

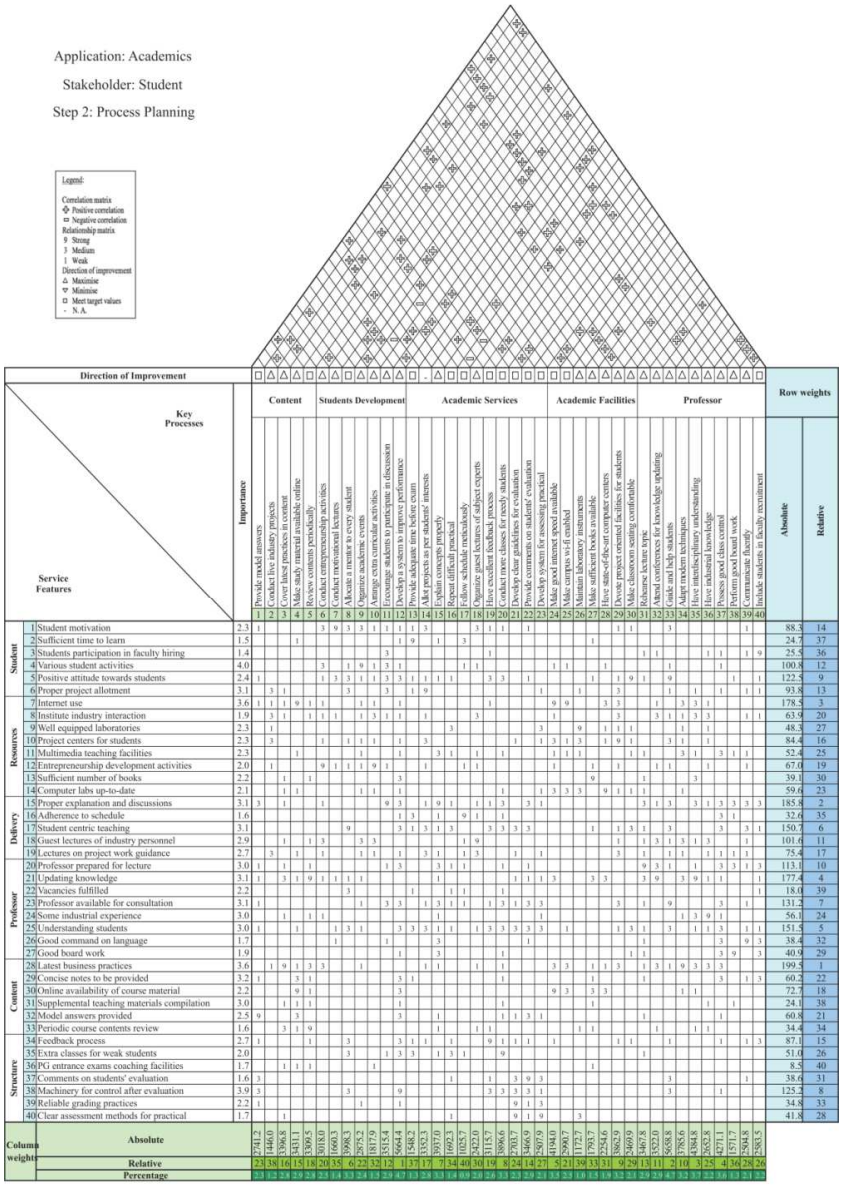


Figure 3: Process Planning House of Quality

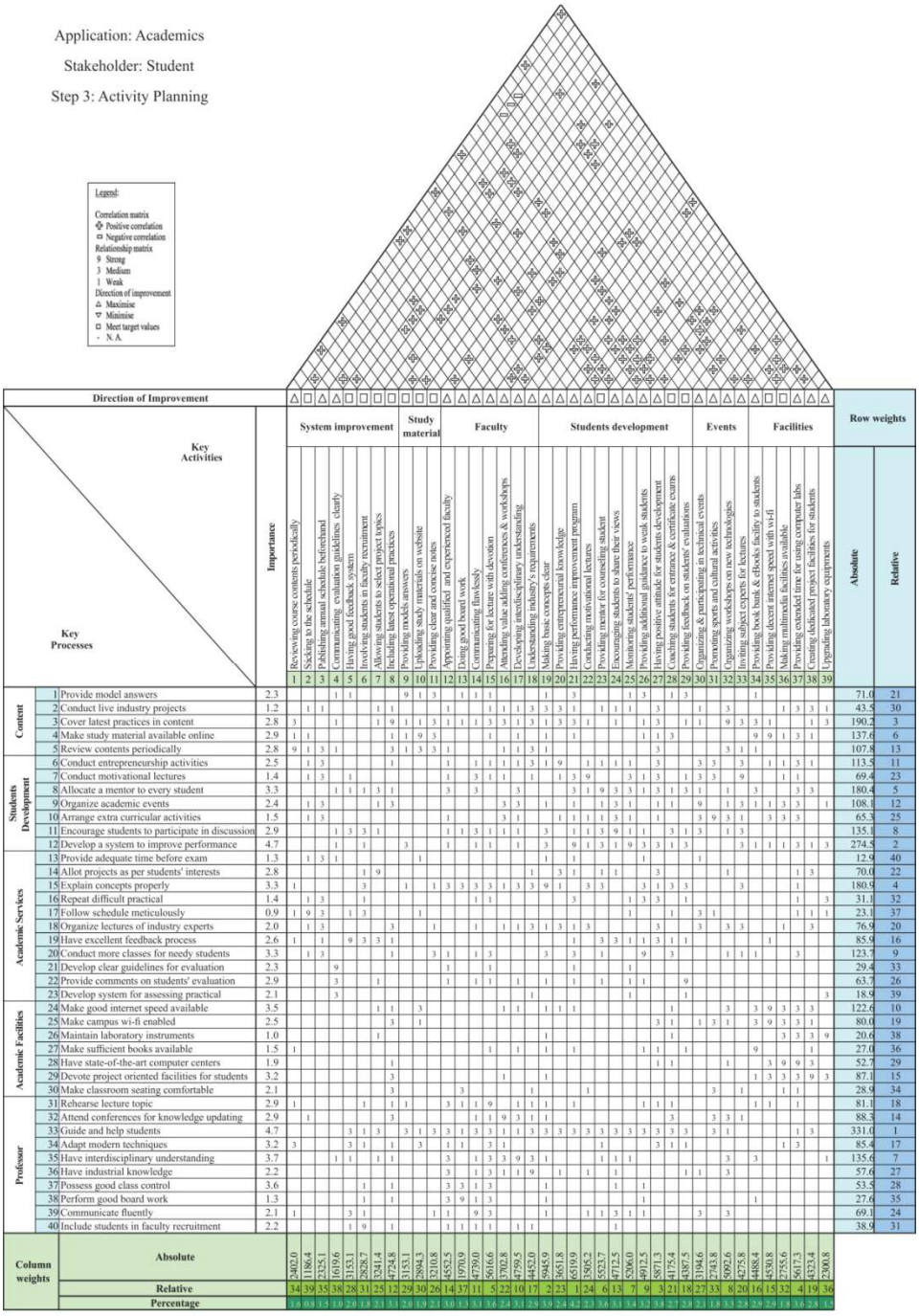


Figure 4: Activity Planning House of Quality

QFD models are thus developed through series of Service Planning, Process Planning and Activity Planning HOQs. The Stakeholders' Requirements are hence translated to the Key Activities through Service Features and Key Processes. The effect of every Stakeholders' Requirement, Service Features and Key Processes are considered in prioritizing the Key Activities. The final prioritized Key Activities are then fed to the results analysis sheets.

RESULTS ANALYSIS FOR STUDENTS IN ACADEMICS APPLICATIONS

The key activities delineated as a result of the three HOQs of the QFD model presented above were categorized as A, B, C as per their level of importance with A being the most important ones and C being the least important ones.

Table 6: Results analysis for Students in Academics applications

No.	Category	Key Activities	%	Cum %	Analysis
21	Students' development	performance improvement program	4.23	4.23	A
19	Students' development	Making basic concepts clear	3.85	8.08	A
27	Students' development	positive attitude for students development	3.81	11.89	A
37	Facilities	extra time for using computer labs	3.64	15.53	A
15	Faculty	Preparing for lecture with devotion	3.64	19.17	B
23	Students' development	Providing mentor for counseling student	3.58	22.75	B
25	Students' development	Monitoring students' performance	3.37	26.13	B
32	Events	workshops on new technologies	3.3	29.43	B
26	Students' development	additional guidance to weak students	3.18	32.61	B
17	Faculty	interdisciplinary understanding	3.09	35.7	B
14	Faculty	Communicating flawlessly	3.07	38.77	B
8	System improvement	Including latest operational practices	3.06	41.83	B
24	Students' development	Encouraging students to share views	3.05	44.89	C
12	Faculty	qualified and experienced faculty	2.95	47.84	C
35	Facilities	decent internet speed with wi-fi	2.94	50.78	C
34	Facilities	book bank & eBooks facility to students	2.91	53.69	C
18	Faculty	Understanding industry's requirements	2.89	56.57	C
29	Students' development	Providing feedback on students' evaluations	2.84	59.42	C
38	Facilities	project oriented facilities for students	2.8	62.22	C
33	Events	Inviting subject experts for lectures	2.77	64.99	C
28	Students' development	Coaching students for certificate exams	2.71	67.7	C
16	Faculty	Attending value adding conferences	2.4	70.1	C
20	Students' development	Providing entrepreneurial knowledge	2.37	72.46	C
22	Students' development	Conducting motivational lectures	2.27	74.74	C
7	System improvement	Allowing students to select project topics	2.1	76.84	C
11	Study material	Providing clear and concise notes	2.08	78.92	C
30	Events	Organizing & participating in technical events	2.07	80.99	C

Table 6: Contd.,

5	System improvement	Having good feedback system	2.04	83.03	C
9	Study material	Providing models answers	2.04	85.08	C
10	Study material	Uploading study materials on website	1.88	86.95	C
6	System improvement	Involving students in faculty recruitment	1.83	88.79	C
36	Facilities	Making multimedia facilities available	1.79	90.57	C
31	Events	Promoting sports and cultural activities	1.78	92.35	C
1	System improvement	Reviewing course contents periodically	1.56	93.91	C
3	System improvement	Publishing annual schedule beforehand	1.51	95.42	C
39	Facilities	Upgrading laboratory equipments	1.49	96.91	C
13	Faculty	Doing good board work	1.28	98.18	C
4	System improvement	Communicating evaluation guidelines clearly	1.05	99.23	C
2	System improvement	Sticking to the schedule	0.77	100	C

CONCLUSIONS

According to the requirements of students, after considering all important needs, services and processes, the Key Activities suggest management to mainly concentrate on students' development activities. Programs and activities have to be conducted for students. More concentration should also be provided on making students' basic concept clear. There should be a positive attitude of the management towards students' development in order to excel them in all fields including academics. If these actions are taken appropriately, then rest things will be easily taken care of. More time should also be provided to students for using computer labs so that they can use internet for project, research and other academic work. The teaching staff should also be very well prepared before going to the lecture. Students' performance should regularly be monitored. For improving academic standards, teachers should also develop interdisciplinary understanding and they should possess excellent communication skills.

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